

Notice of Allowability

Application No.

10/605,773

Examiner

Michael W. Talbot

Applicant(s)

CALDWELL ET AL.

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 05 September 2006.
2. ☒ The allowed claim(s) is/are 1,5-7,14-21,24-35 and 37-40.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Monica S. Carter
MONICA CARTER
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with attorney Mr. Frederick W. Gibb on Tuesday, 28 November 2006.

The application has been amended as follows:

Claims:

(a) Claim 17, lines 4 and 5, the two occurrences of "said pins" should be changed so as to read --said electrostatic chuck pins-- to provide proper antecedent basis.

2. The following is an examiner's statement of reasons for allowance:

Claims 1,5-7,14-21,24-35 and 37-40 are allowed.

Claims 1,14,17,21,24,28,34 and 35 are the independent claims.

3. Regarding claim 1, the prior art of record fails to anticipate or make obvious (1) "individually controlled height adjustment mechanisms", (2) "electrostatic chuck pins connected to said height adjustment mechanisms" and (3) "to change a shape of a device being held by said electrostatic chuck pins", in combination with, an electrostatic chuck having a base plate and electrostatic chuck pins.

Okuda '338 and Di Milia et al. '192 are the closest arts of record.

Okuda '338 shows in Figures 5 and 6 a chuck assembly (50) comprising a base plate (52), independently controlled height adjustment mechanisms (col. 5, line 27 through col. 6, line 10) connected to the base plate, and chuck pins (64) connected to the height adjustment mechanism. Okuda '338 shows the height adjustment mechanisms being adapted to

Art Unit: 3722

independently adjust positions of the chuck pins to compensate for flatness deformities caused by foreign matter particles (70) in a device/wafer (54) being held by the chuck pins (col. 5, line 66 through col. 6, line 10).

Okuda '338 lacks (1) the chuck assembly being an electrostatic chuck and (2) the chuck pins being electrostatic and connected to individually controlled height adjustment mechanisms for changing a shape of a device being held by said electrostatic chuck pins.

Although it is well known to have an electrostatic chuck and a control height adjustment mechanism for leveling a wafer, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings of Okuda '338, noting that in Okuda '338, the chuck is a vacuum chuck having independently controlled height adjustments from a common source, i.e. as the vacuum source and/or air pressure controls all pins together, and not individually controlled height adjustments from individual sources controlling each pin independently. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claim 1.

4. Di Milia et al. '192 shows in Figure 3 an electrostatic pin chuck (12) comprising a base plate, height adjustment mechanisms (38), and electrostatic chuck pins (30) due to the silicon dioxide film coating of the pins.

Di Milia et al. '192 lacks (1) the electrostatic chuck pins being connected to individually controlled height adjustment mechanisms for changing a shape of a device being held by said electrostatic chuck pins.

Although it is well known to have a control height adjustment mechanism for leveling a wafer, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings

Art Unit: 3722

of Di Milia et al. '192, noting that in Di Milia et al. '192, the chuck does not have the electrostatic chuck pins being connected to individually controlled height adjustment mechanisms, from individual sources controlling each pin independently, for changing a shape of a device being held by said electrostatic chuck pins. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claim 1.

5. Regarding claims 14,17,21 and 24, the prior art of record fails to anticipate or make obvious (1) "individually controlled height adjustment mechanisms and electrostatic pins connected to said height adjustment mechanisms", (2) "a measurement tool to measure the flatness of a device", and (3) "a computer linked to said height adjustment mechanisms and said measurement tool to change a shape of a device being held by said electrostatic chuck pins based upon feedback from said measurement tool", in combination with, an electrostatic chuck having a base plate and electrostatic chuck pins.

Okuda '338 and Di Milia et al. '192 are the closest arts of record.

Okuda '338 shows in Figures 5 and 6 a chuck assembly (50) comprising a base plate (52), independently controlled height adjustment mechanisms (col. 5, line 27 through col. 6, line 10) connected to the base plate, and chuck pins (64) connected to the height adjustment mechanism. Okuda '338 shows the height adjustment mechanisms being adapted to independently adjust positions of the chuck pins to compensate for flatness deformities caused by foreign matter particles (70) in a device/wafer (54) being held by the chuck pins (col. 5, line 66 through col. 6, line 10).

Okuda '338 lacks (1) the chuck assembly being an electrostatic chuck, (2) individually controlled height adjustment mechanisms and electrostatic pins connected to said height adjustment mechanisms, (3) a measurement tool to measure the flatness of a device, and (4) a

Art Unit: 3722

computer linked to said height adjustment mechanisms and said measurement tool to change a shape of a device being held by said electrostatic chuck pins.

Although it is well known to have an electrostatic chuck, a control height adjustment mechanism for leveling a wafer, a measurement tool for calculating the flatness of a wafer and a computer to control the process, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings of Okuda '338, noting that in Okuda '338, the chuck is a vacuum chuck having independently controlled height adjustments from a common source, i.e. as the vacuum source and/or air pressure controls all pins together, and not individually controlled height adjustments from individual sources controlling each pin independently, and furthermore there is no measurement tool or a computer for individually adjusting said height adjustment mechanisms based on feedback from the missing measurement tool. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claims 14, 17, 21 and 24.

6. Di Milia et al. '192 shows in Figure 3 an electrostatic pin chuck (12) comprising a base plate, height adjustment mechanisms (38), and electrostatic chuck pins (30) due to the silicon dioxide film coating of the pins.

Di Milia et al. '192 lacks the (1) "individually controlled height adjustment mechanisms and electrostatic pins connected to said height adjustment mechanisms", (2) "a measurement tool to measure the flatness of a device", and (3) "a computer linked to said height adjustment mechanisms and said measurement tool to change a shape of a device being held by said electrostatic chuck pins".

Although it is well known to have a control height adjustment mechanism for leveling a wafer, a measurement tool for calculating the flatness of a wafer and a computer to control the

Art Unit: 3722

process, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings of Di Milia et al. '192, noting that in Di Milia et al. '192, the chuck does not have the electrostatic chuck pins being connected to individually controlled height adjustment mechanisms, from individual sources controlling each pin independently, and a measurement tool or a computer for individually adjusting said height adjustment mechanisms based on feedback from the missing measurement tool for changing a shape of a device being held by said electrostatic chuck pins. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claims 14, 17, 21 and 24.

7. Regarding claims 28, 34 and 35, the prior art of record fails to anticipate or make obvious a method of (1) "attaching said device to electrostatic pins of said electrostatic chuck", (2) "measuring a flatness of said device" using an interferometer, and (3) "individually controlling each of said electrostatic pins to individually adjust a height of each of said electrostatic pin to change a shape of a device being held by said electrostatic chuck pins" or "individually controlling a height of height adjustment mechanisms connected to said electrostatic pins to change a shape of a device being held by said electrostatic chuck pins".

Okuda '338 and Di Milia et al. '192 are the closest arts of record.

Okuda '338 shows in Figures 5 and 6 a chuck assembly (50) comprising a base plate (52), independently controlled height adjustment mechanisms (col. 5, line 27 through col. 6, line 10) connected to the base plate, and chuck pins (64) connected to the height adjustment mechanism. Okuda '338 shows the height adjustment mechanisms being adapted to independently adjust positions of the chuck pins to compensate for flatness deformities caused by foreign matter particles (70) in a device/wafer (54) being held by the chuck pins (col. 5, line 66 through col. 6, line 10).

Okuda '338 lacks (1) the chuck assembly being an electrostatic chuck, (2) measuring a flatness of said device using an interferometer, and (3) individually controlling each of said electrostatic pins or height adjustment mechanisms to change a shape of a device being held by said electrostatic chuck pins.

Although it is well known to have an electrostatic chuck with a control height adjustment mechanism for leveling a wafer and a means for calculating the flatness of a wafer, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings of Okuda '338, noting that in Okuda '338, the chuck is a vacuum chuck having independently controlled height adjustments from a common source, i.e. as the vacuum source and/or air pressure controls all pins together, and not individually controlled height adjustments from individual sources controlling each pin independently. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claims 28,34 and 35.

8. Di Milia et al. '192 shows in Figure 3 an electrostatic pin chuck (12) comprising a base plate, height adjustment mechanisms (38), and electrostatic chuck pins (30) due to the silicon dioxide film coating of the pins.

Di Milia et al. '192 lacks (1) measuring a flatness of said device, and (2) individually controlling each of said electrostatic pins or height adjustment mechanisms to change a shape of a device being held by said electrostatic chuck pins.

Although it is well known to have a control height adjustment mechanism for leveling a wafer and a means for calculating the flatness of a wafer, there is no teaching in the prior art of record that would, reasonably and absent impermissible hindsight, motivate one having ordinary skill in the art to so modify the teachings of Di Milia et al. '192, noting that in Di Milia et al. '192,

Art Unit: 3722

the chuck does not have the electrostatic chuck pins being connected to individually controlled height adjustment mechanisms, from individual sources controlling each pin independently, and a means for calculating the flatness of the wafer. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor rendered obvious the present invention as set forth in independent claims 28,34 and 35.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mrs. Monica S. Carter, may be reached at 571-272-4475.

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 571-273-8300. This practice may be used for filling papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private

Art Unit: 3722

PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MWT

Examiner

29 November 2006


MONICA CARTER
SUPERVISORY PATENT EXAMINER